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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/933,494
Filing Date: August 20, 2001
Appellant(s): MORGAN, STEPHEN PAUL

John L. Rogitz (Reg. No. 33,549)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/2/05 appealing from the Office action mailed 2/12/04.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,477,624	Kedem et al.	11-1999
5,802,365	Kathail et al.	9-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, 5-6, 8, 10, 12-15, 17, 19-21, 23-24 and 26 are rejected under 35 USC § 102(e), as being anticipated by US Patent No. 6,477,624 to Kedem et al. (hereinafter Kedem).

Claims 9, 18 and 27 are rejected under 35 USC § 103(a) as being unpatentable over US Patent No. 6,477,624 to Kedem et al.(Kedem), and Claims 7, 16 and 25, are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,477,624 to Kedem et al. (Kedem) as applied to claims 1, 10, and 19, above, and further in view of US Patent No. 5,802,365 to Kathail et al. (hereinafter Kathail). The claim rejections are supported by the following findings:

Findings

1. As per the Applicant's specification, figure 1 discloses:

a secure network computer (SNC) [element 14 - page 4 lines 6-7] having no local hard disk drive [page 5 line 1], having a Central Processing Unit (CPU) [element 16 – page 4 lines 7-11], the CPU communicating through a motherboard [element 17] over a PCI bus [element 20 – page 4 lines 5 lines] with an adapter [element 26], the adapter used for communication with a network [element 12], the network being operably connected to a storage [element 28]. As further disclosed, the adapter [element 26] "simply intercepts disk I/O requests, *transforms** them into network requests, and satisfies the requests by communicating with the network 12" [see page 5 lines 20-23]. Also, as per the description of functional blocks 36 and 38 from figure 2: "At block 36, the disk I/O requests are *translated*** by the adapter 26 to network I/O requests, transparently to the CPU 16 and its attendant operating system. At block 38 the network requests are sent to the network 12 for execution thereof." [see page 6 lines 18-22]

*Note the cited section of the specification is only directed to an I/O request that is transformed to a network request.

**Note the cited section of Applicant's specification is the only section found in the specification that mentions the term "translated" in any form. There appears to be no details/specifics directed to the translation operation. Applicant fails to provide support for what entails a translation operation. Applicant merely discloses the forwarding of a local I/O request

to a network request. The translation disclosed in Applicant's specification doesn't necessarily mean translating from one protocol to another protocol.

2. US Patent No. 6,477,624 to Kedem et al. (hereinafter Kedem), in figures 2, 3 and 4, discloses:

a computer [element 100 - column 10 lines 36-38] having no local hard disk drive [column 4 lines 52-64, "in some embodiments there will be no LPSD"(LPSD: Local Persistent Storage Device - column 3 lines 28-48)], having a Central Processing Unit (CPU) [element 302 lines], the CPU communicates through a motherboard [element 306 – column 10 lines 38-45] over a PCI bus [element 303 – column 11 lines 2-3] over a disk adapter [element 304] with an adapter [element 202 "LDIM card" shown in figures 2,3 and 4 - column 10 lines 38-46], the adapter used for communication with a network [network element 210 shown in figures 2 and 3 - column 8 lines 28-33, LDIM and RDIM communicate over a network 210 - column 9 lines 9-15, and lines 33-36, the LDIM card performs the steps of: (a)-intercepts disk I/O requests and (b)-transmits network I/O requests to RDIM element (Remote Data Image Manager) - column 10 lines 17-21, the LDIM forwards disk I/O requests over a network as network requests to RDIM) - column 11 lines 16-23 which disclose the element composition of the LDIM card showing element 402, an Ethernet network controller used to enable the LDIM card to communicate over a network], the network being operably connected to a storage [RPSD element (Remote Persistent Storage Device) which is storage coupled to the RDIM element 204 (Remote Data Image Manager), the RDIM being connected to network element 210, column 4 lines 32-38].

As shown above, Kedem's LDIM card intercepts disk I/O requests and then transmits them as network requests to satisfy them over a network. The factual evidence that the LDIM card takes local storage requests (disk I/O requests) and forwards them over a network (as

network I/O requests) to access remote storage, shows that a "translation" operation takes place.

3. As shown above, what is disclosed by the Applicant's instant application and Kedem appears to be the same. Since the Applicant's specification has failed to provide particular specifics directed to his translation operation, the translation operation disclosed by Kedem anticipates the claimed subject matter.

The Examiner has parsed each limitation of the claims in the application (Claims 1, 10 and 19) and mapped it to the respective references of the prior art reference US Patent No. 6,477,624 to Kedem et al. (hereinafter Kedem) in the table below.

Claim Language	***Prior art to Kedem***	***Examiner Comments***
Claims 1, 10 and 19: A system comprising: a computer including a central processing unit (CPU) but not including a local hard disk drive;	Figs. 2 and 3, show element 100 being a computer. Fig.3 shows element 100 including CPU element 302. Column 4 lines 52-64 discloses the computer not including a local hard disk drive (a LPSD as per the reference)	
an adapter coupled to the CPU for receiving local disk I/O requests therefrom, the adapter translating disk I/O requests into network I/O requests; and	Figs. 2, 3 and 4 show "LDIM" element 202, column 10 lines 38-46. Column 3 line 62 to column 4 line 3 shows the function of the LDIM card. Column 9 lines 9-15 and column 10 lines 56-62 show the LDIM receiving local disk I/O requests. Column 9 lines 33-36, column 10 lines 17-21 and column 8 lines 28-33 show the adapter translates the received disk I/O requests into network I/O requests when satisfying the requests using a remote storage (RDIM accesses the RPSD) over a network, the disk I/O requests which were originally intended to be received by local storage. In addition, Figs. 2 and 3 also show LDIM adapter connected to network 210. Fig 4, column 11 lines 16-23 describes the elements inside the LDIM adapter card including an Ethernet controller element 402 which resides inside LDIM element 202. Please Note column 14 lines 11-22 which state that in an alternative embodiment, LDIM card doesn't have to do any ***routing or Network Address Translation (NAT)*** when	The LDIM card is an adapter that intercepts local disk I/O requests and satisfies them by sending network I/O requests to RDIM element across the network which is coupled to RPSD element (storage element). Figures 2 and 3 show the LDIM card (element 202) using network 210 to communicate with RDIM element 204. The types of network supported include a Local Area Network (LAN), Wide Area Network (WAN), the Internet, the public switched telephone network, a Wireless network (see column 3 lines 42-48) The use of network packets to communicate with a network element such as the LDIM card element 202 shows the LDIM card uses a type of network protocol when communicating with the RDIM

	connected to an existing Network Interface Card (a NIC). However, when not connected to an existing card, the LDIM card provides routing and Network Address Translation. In addition, the same section discloses using an IP address for the LDIM card and determining whether the network packet was directed to the LDIM card.	element across the network. This communication protocol is different from the internal disk I/O communication protocol used to communicate with the local CPU inside the computer system. There is a translation done from disk I/O requests to network I/O requests when sending a request to the RDIM via the use of network 210.
at least one network resource communicating with the adapter for satisfying the local disk I/O requests.	Figs. 2 and 3 show network element 210 which can be a Local Area Network (LAN), Wide Area Network (WAN), the Internet, the public switched telephone network, a Wireless network (see column 3 lines 42-48, column 4 lines 60-64, column 8 lines 28-33)	
With further regards to claim 10: ...the use of an operating system not modified... ...satisfying the disk I/O request... ...transparently to a CPU in the diskless computer	Column 6 lines 50-55, column 8 lines 23-27 and column 10 lines 56-62 disclose the use of unmodified operating systems, and satisfying the disk I/O requests transparently to the CPU inside the computer without a local hard drive.	
Claims 2, 12 and 20: ...wherein the adapter is plugged into a motherboard holding the CPU	Column 6 lines 34-39 and column 10 lines 38-46 disclose the LDIM card being a PC card similar to an Ethernet Card.	PC cards and Ethernet cards are pluggable into a motherboard.
Claims 3, 13 and 21: ...wherein the adapter is connected by a connecting cable to a motherboard holding the CPU	Fig. 3, cable element 302(a) connects LDIM card element 202 to motherboard element 306. Motherboard element 306 holds CPU element 302. See column 10 lines 38-46	
Claims 5, 14, 23: ...wherein the adapter is also a computer network adapter.	See claim 1 above.	
Claims 6, 15 and 24: ...wherein the adapter is not a conventional computer	Column 14 lines 11-22.	The LDIM can have it's own NIC (an Ethernet controller element 402 as shown in Fig

network adapter, the computer including a conventional network adapter separate fro the adapter.		4.) or it can be connected to a separate NIC.
Claims 8, 17 and 26: ...wherein the adapter causes a conventional operating system configured for generating local disk I/O requests to be loaded from a network storage to a volatile memory in the computer.	Column 8 line 40 to column 9 line 1 and column 2 line 65 to column 3 line 6 show how the LDIM can load a conventional operating system into volatile memory. (fig 2 application programs element 108 and OS element 102 run in volatile memory)	
Claims 9, 18 and 27: ...wherein the adapter is housed within the computer.	Figure 2 and 3, LDIM element 202 is shown inside Computer Element 100. See column 10 lines 35-46.	
Claim Language	***Prior art to Kedem in view of Kathail et al.***	***Examiner Comments***
Claims 7, 16 and 25: ...wherein the adapter includes a sequence of bytes identifying the adapter to the CPU as a secondary boot device.	Kathail teaches a PCI boot device (an adapter) providing a set of properties such as its identification to the system in which it is installed within (controlled by a CPU) during boot up for the purpose of recognizing the device so it can be configured and used by the system [column 39 lines 35-55].	It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Kedem and Kathail to have the adapter include a sequence of bytes identifying the adapter to the CPU as a secondary boot device for the purpose of recognizing the device so it can be configured and used by the system to be able to access data from a remote location.

(10) Response to Argument

Issue 1

1. Appellant argues that Kedem et al. fails to teach that the LDIM adapter fails to translate disk I/O requests to network I/O requests, and that such disk requests are directly transmitted as disk I/O requests from the LDIM to the RDIM without the claimed translation.

Examiner's response to Issue 1:

2. Examiner respectfully disagrees. As shown above under the *Findings* section, the translation done by the instant application is no different than the translation being performed by Kedem et al. In light of the specification, as cited in page 5 lines 20-23, and page 6 lines 18-22, the Appellant requires for merely receiving disk I/O requests and then sending them as network I/O requests from a local device to a network device. Kedem et al. teaches an LDIM card [figures 2,3,4, element 202] receiving disk I/O requests [disclosed in column 3 line 62 to column 4 line 3, column 10 lines 38-46, and lines 56-62] in one protocol [column 10 line 63 to column 11 line 4] and sending them as network I/O requests using a different protocol [disclosed in column 9 lines 33-36, column 10 lines 17-21 and column 8 lines 28-33] from a local device [computer element 100 containing the LDIM card element 202 figures 2,3,4] to a network device [RDIM element 204 shown in figure 2, via network element 210 shown in figures 2 and 3]. The LDIM card shown in Figure 4 discloses an Ethernet controller element 402 which is used to communicate via the network element 210 with the remote RDIM element 204 [column 11 lines 16-23]. Column 8 lines 43-45 disclose the LDIM element 202 including a "mini-booter", and Column 9 lines 5-8 disclose how the mini-booter enables ~~to~~ the LDIM 202 to select from using **DHCP or a static IP address**, which are options selected by any network device that uses the **TCP/IP protocol** (a networking protocol used by networks such as the Internet), thus also proving that when the LDIM communicates via the network, the disk I/O requests are translated into network I/O requests since it is using a network protocol.

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Furthermore, column 14 lines 11-22 state that in the LDIM card doesn't necessarily have to do any ***routing or Network Address Translation (NAT)*** when connected to an existing Network Interface Card (a NIC). However, when not connected to an existing NIC card, the LDIM card does provides its own routing and Network Address Translation. The use of network packets to communicate with a network element such as the LDIM card element 202 shows the

LDIM card uses a type of network protocol (such as the TCP/IP protocol as per the use of DHCP or a static IP address assignment shown above) when communicating with the RDIM element across the network. This communication protocol is different from the internal disk I/O communication protocol used to communicate with the local CPU inside the computer system, thus showing a translation being done from disk I/O requests to network I/O requests when sending a request to the RDIM via the use of network 210.

Issue 2

3. Appellant argues that because of Issue 1 above, dependent claims are patentable. Further, Kedem et al. fails to teach an *adapter card.* Kedem et al teaches that the LDIM is somewhere inside the computer, not that it is on an adaptor card.

Examiner's response to Issue 2:

4. Examiner respectfully disagrees. For the same reasons as those above under the Examiner's response to Issue 1, the dependent claims stand not patentable. Furthermore the Examiner would like to point to Column 6 lines 34-39 and column 10 lines 38-46 which disclose the LDIM card being a PC card similar to an Ethernet Card. PC cards and Ethernet cards are pluggable into PC motherboards such as motherboard element 306 shown in Figure 3. In addition, Figures 2 and 3 show the LDIM element 202 inside Computer Element 100, and column 10 lines 35-46 clearly states the LDIM card element 202 being inside computer element 100.

Issue 3

5. Appellant argues that because of Issue 1 above, dependent claims are patentable. Further, the proposed combination of Kedem et al. and Kathail et al. lacks prior art support. The

proffered suggestion to combine does not find support in the references. It provides no cited motivation to combine it with the LDIM of Kedem et al.

Examiner's response to Issue 3:

6. Examiner respectfully disagrees. For the same reasons as those above under the Examiner's response to Issue 1, the dependent claims stand not patentable. Furthermore, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation is found in the knowledge generally available to one of ordinary skill in the art. Kedem et al. teaches the LDIM card is a PC card that plugs into the motherboard, and communicating with the CPU through the PCI bus [as shown above] and thus being a PCI device. Kathail et al. teaches that a PCI device is required to provide a set of properties in its PCI configuration space, and consequently a PCI boot device (an adapter that is a PCI device) provides a set of properties such as its identification to the system in which it is installed within (controlled by a CPU) during boot up for the purpose of recognizing the device so it can be configured and used by the system [column 39, lines 35-55].

7. For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Examiner David E. Martinez
4/26/06

Conferees

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